

Amendments to the Claims: This listing of claims will replace all prior versions, and listings, of claims in the application

Listing of Claims:

1. (Currently Amended) A dual camera module comprising:
a substrate having circuitry thereon for receiving image data;
a first_image module for capturing first image data of a first orientation of a first scene,
and including a first output for transmitting the first image data to the circuitry on the substrate;
a second image module for capturing second image data of a second orientation of the first scene, different from the first orientation of the first scene, or a different scene, and including a second output for transmitting the second image data to the circuitry on the substrate; and
a flex interconnect having a common data line that is shared by the first and second image modules, the common data line being configured to electrically connect the first and second outputs to the circuitry on the substrate,
wherein, at the first image module, a portion~~portions~~ of the first and second image data are~~is~~ selectively blocked by tri-stating a connection between the first image module and the common data line during a first time period and at the second image module, a portion of the second image data is selectively blocked by tri-stating a connection between the second image module and the common data line during a second time period, the first and second time periods being consecutive time periods at each respective image module to synchronize the first and second image data received by the circuitry on the substrate to generate a composite image that includes at least one portion of each of the captured first and second image data.
2. (Currently Amended) ~~A~~The dual camera module recited in claim 1, further comprising: control lines, further data lines and at least one component on the flex interconnect that are shared by the first and second image modules.
3. (Previously Presented) The dual camera module recited in claim 1, wherein each of the image modules comprises a lens and an imaging sensor.
4. (Previously Presented) The dual camera module recited in claim 1, wherein each of the image modules comprises a lens and a combination imaging sensor and image processor.
5. (Currently Amended) The dual camera module recited in claim 1, wherein the first image module faces a first direction and the second image module faces a second direction

such that the first image data represents the first scene and the second image data represents the different scene.

6. (Previously Presented) The dual camera module recited in claim 1, wherein each of the image modules is uniquely addressable.

7. (Previously Presented) The dual camera module recited in claim 1, wherein the first and second image modules respond to a common or global address.

8. (Previously Presented) The dual camera module recited in claim 1, wherein said flex interconnect includes an Inter-IC (I2C) bus.

9. (Previously Presented) The dual camera module recited in claim 1, wherein said flex interconnect includes a Serial Peripheral Interface (SPI).

10. (Previously Presented) The dual camera module recited in claim 1, wherein each of the image modules is programmed to respond to a unique Inter-IC (I2C) address.

11. (Previously Presented) The dual camera module recited in claim 1, wherein each of the image modules is programmed to respond to a common address.

12. (Currently Amended) The dual camera module recited in claim 1, wherein the first and second image modules are each configured to alternate the tri-state~~tri-stating of the connection with the common data linear output signal thereof.~~

13. (Previously Presented) The dual camera module recited in claim 1, wherein the first image module captures images at a first resolution and the second image module captures images at a second resolution.

14. (Currently Amended) The dual camera module recited in claim 1, wherein the first and second image module face a common direction such that captures images the first image module captures images having from a the first orientation of the first scene and a the second image module captures images having from the a second orientation of the first scene.

15. (Previously Presented) The dual camera module recited in claim 1, wherein the first image module captures images of a first color range and the second image module captures images of a second color range.

16. (Previously Presented) The dual camera module recited in claim 1, wherein the first image module has a first focal length and a second image module has a second focal length.

17. (Currently Amended) An electronic apparatus comprising:
a substrate having circuitry thereon for receiving image data; and
a dual camera module connected to said substrate, said dual camera module adapted to capture images, the dual camera module including

a first image module adapted to capture a first image in a first direction, and including a first output for transmitting the first captured image to the circuitry on the substrate,

a second image module adapted to capture second image in a second direction, and including a second output for transmitting the second captured image to the circuitry on the substrate, and

a common set of data lines that are shared by the first and second image modules, the common set of data lines being configured to electrically connect the first and second outputs to the circuitry on the substrate,

wherein, at the first image module, a portion of the first and second captured images are selectively blocked by tri-stating a connection between the first image module and the common set of data lines during a first time period and at the second image module, a portion of the second captured image is selectively blocked by tri-stating a connection between the second image module and the common set of data lines during a second time period, the first and second time periods being consecutive time periods at each respective image module to synchronize the first and second captured images received by the circuitry on the substrate to generate a composite image that includes at least one portion of each of the captured first and second images.

18. (Previously Presented) The electronic apparatus recited in claim 17, wherein each of the image modules comprises a lens and an imaging sensor.

19. (Currently Amended) The ~~dual-camera module~~ electronic apparatus recited in claim 17, wherein each of the image modules comprises a lens and a combination sensor and image processor.

20. (Previously Presented) The electronic apparatus recited in claim 17, wherein each of the image modules further comprises an imaging filter.

21. (Previously Presented) The electronic apparatus recited in claim 17, wherein the first direction and the second direction are opposite directions relative to each other.

22. (Previously Presented) The electronic apparatus recited in claim 17, wherein said common set of data lines is included in a flex interconnect that includes an Inter-Integrated Circuit (I2C) bus.

23. (Previously Presented) The electronic apparatus recited in claim 17, wherein said common set of data lines is included in a flex interconnect that includes a Serial Peripheral Interface (SPI) bus.

24. (Previously Presented) The electronic apparatus recited in claim 22, wherein each of the image modules is programmed to respond to a unique I2C address.

25. (Previously Presented) The electronic apparatus recited in claim 23, wherein each of the image modules is programmed to respond to a unique slave select signal on the SPI bus.

26. (Currently Amended) The ~~dual-camera module~~electronic apparatus recited in claim 17, wherein the image modules respond to a common address.

27. (Currently Amended) The electronic apparatus recited in claim 17, further comprising: a screen for displaying the composite image~~captured images~~.

28. (Currently Amended) The electronic apparatus recited in claim 17, further comprising: a screen coupled to the circuitry on the substrate for displaying the composite image which includes one of: (1) the first and second captured images synchronized to generate a split screen orientation thereof for display; or (2) the first and second captured images synchronized to generate a picture-in-picture orientation thereof for~~displaysimultaneously displaying the first captured image from the first image module synchronized with the second captured image from the second image module.~~

29. (Previously Presented) The electronic apparatus recited in claim 17, wherein said first image module has a first focal length and said second image module has a second focal length.

30. (Currently Amended) The ~~dual-camera module~~electronic apparatus recited in claim 17, wherein the first image module captures images of a first resolution and the second image module captures images of a second resolution.

31. (Currently Amended) An electronic apparatus, comprising:

a substrate;

a first image module adapted to capture a first image with a first orientation in a first direction and mounted on said substrate;

a second image module adapted to capture a second image with either a second orientation in either the first direction or in a second direction and~~ands~~ mounted on said substrate; and

a screen coupled to the substrate and adapted to display the first and second images captured by said first and second image modules,

wherein ~~portions of the first and second images are selectively blocked at each respective image module to synchronize the first and second images displayed on the screen, at the first image module, a portion of the first captured image is selectively blocked by tri-stating~~

an output thereof during a first time period and at the second image module, a portion of the second captured image is selectively blocked by tri-stating an output thereof during a second time period, the first and second time periods being consecutive time periods to synchronize the first and second captured images received by circuitry on the substrate to generate a composite image of at least one portion of each of the first and second images on the screen.

32. (Currently Amended) The electronic apparatus recited in claim 17, further comprising:

a screen for displaying the composite image~~first and second captured images~~.

33. (Previously Presented) The electronic apparatus recited in claim 31, wherein each of the image modules comprises a lens and an imaging sensor.

34. (Previously Presented) The electronic apparatus recited in claim 31, wherein each of the image modules is a combination sensor and image processor.

35. (Currently Amended) The electronic apparatus recited in claim 31, wherein said first image module faces at the first direction and said second image module faces at the second direction.

36. (Currently Amended) A method of operating an electronic apparatus having first and second image modules, said method comprising:

first capturing a scene by the first image module while the second image module is not operating~~turned off~~;

previewing the scene on a display;

turning on the second image module after the capturing of the scene by the first image module; and

second capturing, immediately after the turning on of the second image module, the scene at a higher resolution than the previewed scene using the second image module based on the previewed scene such that fixed pattern noise in the second captured scene when the second image module has been turned off during the first capturing of the scene is reduced relative to the fixed pattern noise in the second captured scene if the second image module has been turned on during the first capturing of the scene.

37. (Canceled)

38. (Currently Amended) A method of operating an electronic apparatus, the electronic apparatus including first and second image modules having first and second outputs, respectively, said method comprising

capturing first and second scenes, as first and second data streams, using the first image module and the second image module, respectively;

transmitting the first image data stream to circuitry on a substrate via at least one common data line and the first output of the first image module;

transmitting the second image data stream to the circuitry on the substrate via the at least one common data line and the second output of the second image module; and

synchronizing the first and second image data streams received by the circuitry on the substrate by selectively blocking reception of portions of the first and second image data streams transmitted by the first and second outputs, respectively, via the at least one common data line to the circuitry on the substrate, to generate a composite image data stream, wherein the synchronizing of the first and second image data includes tri-stating an output of the first image module during a first time period and tri-stating an output of the second image module during a second time period, the first and second time periods being consecutive time periods such that the first and second captured image data received by the circuitry on the substrate are synchronized to generate the composite image data stream including at least one portion of each of the first and second image data.

39. (Previously Presented) The method recited in claim 38 wherein the at least one common data line is included in a shared tri-state bus and the synchronizing of the first and second image data stream includes selectively tri-stating the first and second outputs using the shared tri-state bus to generate the composite image data stream.

40. (Previously Presented) The method recited in claim 38, wherein the synchronizing of the first and second image data streams is based on a portion of the first scene defining a window-of-disinterest.

41. (Previously Presented) The dual camera module recited in claim 1, wherein:
the first and second image modules have a shared, common housing and include first and second imaging arrays, respectively; and
the flex interconnect attaches the shared, common housing to the substrate and electrically connects the first and second imaging arrays to the circuitry of the substrate.